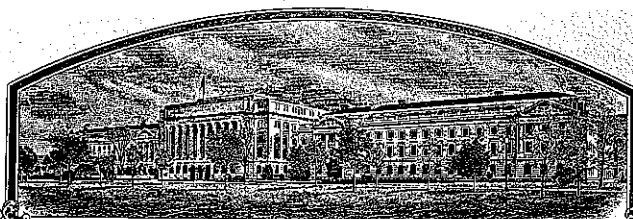


No.

200100066



# THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

ADSH Research Foundation

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED DISTINCT VARIETY OF SEXUALLY REPRODUCED, OR TUBER PROPAGATED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF TWENTY YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR EXPORTING IT, OR CONDITIONING IT FOR PROPAGATION, OR STOCKING IT FOR ANY OF THE PURPOSES, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. IN THE UNITED STATES SEED OF THIS VARIETY (1) SHALL BE IDENTIFIED BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED AND (2) SHALL CONFORM TO THE NUMBER OF GENERATIONS SPECIFIED BY THE OWNER OF THE RIGHTS. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

WHEAT, COMMON

'Alsen'

In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington, D.C. this eighth day of May, in the year of our Lord two thousand one.

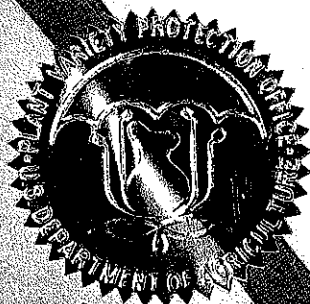
*[Signature]*

Secretary of Agriculture

Attest:

*[Signature]*

Acting Commissioner  
Plant Variety Protection Office  
Agricultural Marketing Service



U.S. DEPARTMENT OF AGRICULTURE  
AGRICULTURAL MARKETING SERVICE  
SCIENCE AND TECHNOLOGY - PLANT VARIETY PROTECTION OFFICE

**APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE**  
(Instructions and information collection burden statement on reverse)

The following statements are made in accordance with the Privacy Act of 1974 (5 U.S.C. 552a) and the Paperwork Reduction Act (PRA) of 1995.

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

<b>1. NAME OF OWNER</b>  NDSU RESEARCH FOUNDATION		<b>2. TEMPORARY DESIGNATION OR EXPERIMENTAL NAME</b>  ND716		<b>3. VARIETY NAME</b>  Alsen	
<b>4. ADDRESS</b> (Street and No., or R.F.D. No., City, State, and ZIP Code, and Country) c/o Executive Director P.O. Box 5014 Fargo, ND 58105-5014		<b>5. TELEPHONE</b> (include area code) 701-231-8931		<b>FOR OFFICIAL USE ONLY</b> <b>RVPO NUMBER</b> 200100066	
<b>6. FAX</b> (include area code) 701-231-1013		<b>FILING DATE</b> January 23, 2001			
<b>7. IF THE OWNER NAMED IS NOT A "PERSON", GIVE FORM OF ORGANIZATION</b> (corporation, partnership, association, etc.) 501 (c) (3) Corporation		<b>8. IF INCORPORATED, GIVE STATE OF INCORPORATION</b> North Dakota		<b>9. DATE OF INCORPORATION</b> May 1989	
<b>10. NAME AND ADDRESS OF OWNER REPRESENTATIVE(S) TO SERVE IN THIS APPLICATION.</b> (First person listed will receive all papers)					<b>FILING AND EXAMINATION FEES:</b> \$ 2,705.00 <b>DATE</b> 1/23/2001 <b>CERTIFICATION FEE:</b> \$ 320 <sup>00</sup> <b>DATE</b> 4-30-01
Richard C. Froberg Department of Plant Sciences North Dakota State University P.O. Box 5051 Fargo, ND 58105-5051		Dale Zetocha Executive Director NDSU Research Foundation P.O. Box 5014 Fargo, ND 58105-5014			
<b>11. TELEPHONE</b> (Include area code) 701-231-8143		<b>12. FAX</b> (Include area code) 701-231-8474		<b>13. E-MAIL</b> richard_frohberg@ndsu.nodak.edu	
<b>14. CROP KIND</b> (Common Name) hard red spring wheat					
<b>18. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED</b> (Follow instructions on reverse)			<b>19. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE SOLD AS A CLASS OF CERTIFIED SEED?</b> See Section 83(a) of the Plant Variety Protection Act <input checked="" type="checkbox"/> YES (If "yes", answer items 20 and 21 below) <input type="checkbox"/> NO (If "no," go to item 22)		
a. <input checked="" type="checkbox"/> Exhibit A. Origin and Breeding History of the Variety b. <input checked="" type="checkbox"/> Exhibit B. Statement of Distinctness c. <input checked="" type="checkbox"/> Exhibit C. Objective Description of Variety d. <input checked="" type="checkbox"/> Exhibit D. Additional Description of the Variety (Optional) e. <input checked="" type="checkbox"/> Exhibit E. Statement of the Basis of the Owner's Ownership f. <input checked="" type="checkbox"/> Voucher Sample (2,500 viable untreated seeds or, for tuber propagated varieties, verification that tissue culture will be deposited and maintained in an approved public repository) g. <input checked="" type="checkbox"/> Filing and Examination Fee (\$2,705), made payable to "Treasurer of the United States" (Mail to the Plant Variety Protection Office)			<b>20. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF CLASSES?</b> <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO IF YES, WHICH CLASSES? <input checked="" type="checkbox"/> FOUNDATION <input checked="" type="checkbox"/> REGISTERED <input checked="" type="checkbox"/> CERTIFIED		
<b>22. HAS THE VARIETY (INCLUDING ANY HARVESTED MATERIAL) OR A HYBRID PRODUCED FROM THIS VARIETY BEEN SOLD, DISPOSED OF, TRANSFERRED, OR USED IN THE U. S. OR OTHER COUNTRIES?</b> <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO IF YES, YOU MUST PROVIDE THE DATE OF FIRST SALE, DISPOSITION, TRANSFER, OR USE FOR EACH COUNTRY AND THE CIRCUMSTANCES. (Please use space indicated on reverse.)			<b>21. DOES THE OWNER SPECIFY THAT THE CLASSES BE LIMITED AS TO NUMBER OF GENERATIONS?</b> <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO IF YES, SPECIFY THE NUMBER 1, 2, 3, etc. <input type="checkbox"/> FOUNDATION <input type="checkbox"/> REGISTERED <input type="checkbox"/> CERTIFIED (If additional explanation is necessary, please use the space indicated on the reverse.)		
<b>23. IS THE VARIETY OR ANY COMPONENT OF THE VARIETY PROTECTED BY INTELLECTUAL PROPERTY RIGHT (PLANT BREEDER'S RIGHT OR PATENT)?</b> <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO IF YES, GIVE COUNTRY, DATE OF FILING OR ISSUANCE AND ASSIGNED REFERENCE NUMBER. (Please use space indicated on reverse.)					
<b>24. The owners declare that a viable sample of basic seed of the variety will be furnished with application and will be replenished upon request in accordance with such regulations as may be applicable, or for a tuber propagated variety a tissue culture will be deposited in a public repository and maintained for the duration of the certificate.</b> The undersigned owner(s) is(are) the owner of this sexually reproduced or tuber propagated plant variety, and believe(s) that the variety is new, distinct, uniform, and stable as required in Section 42, and is entitled to protection under the provisions of Section 42 of the Plant Variety Protection Act. Owner(s) is(are) informed that false representation herein can jeopardize protection and result in penalties.					

SIGNATURE OF OWNER

Dale Zetocha

NAME (Please print or type)

Dale Zetocha

CAPACITY OR TITLE

Executive Director

NDSU Research Foundation

DATE

1/22/01

SIGNATURE OF OWNER

NAME (Please print or type)

CAPACITY OR TITLE

DATE

**GENERAL:** To be effectively filed with the Plant Variety Protection Office (PVPO), **ALL** of the following items must be received in the PVPO: (1) Completed application form signed by the owner; (2) completed exhibits A, B, C, E; (3) for a seed reproduced variety at least 2,500 viable untreated seeds, for a hybrid variety at least 2,500 untreated seeds of each line necessary to reproduce the variety, or for tuber reproduced varieties verification that a viable (*in the sense that it will reproduce an entire plant*) tissue culture will be deposited and maintained in an approved public repository; (4) check drawn on a U.S. bank for \$2,705 \$320 filing fee and \$2,385 examination fee, payable to "Treasurer of the United States" (*See Section 97.6 of the Regulations and Rules of Practice.*) Partial applications will be held in the PVPO for not more than 90 days, then returned to the applicant as unfilled. Mail application and other requirements to Plant Variety Protection Office, AMS, USDA, Room 500, NAL Building, 10301 Baltimore Avenue, Beltsville, MD 20705-2351. Retain one copy for your files. All items on the face of the application are self explanatory unless noted below. Corrections on the application form and exhibits must be initialed and dated. **DO NOT** use masking materials to make corrections. If a certificate is allowed, you will be requested to send a check payable to "Treasurer of the United States" in the amount of \$320 for issuance of the certificate. Certificates will be issued to owner, not licensee or agent.

Plant Variety Protection Office

Telephone: (301) 504-5518

FAX: (301) 504-5291

Homepage: <http://www.ams.usda.gov/science/pvp.htm>

## TEM

- 8a. Give: (1) the genealogy, including public and commercial varieties, lines, or clones used, and the breeding method;  
(2) the details of subsequent stages of selection and multiplication;  
(3) evidence of uniformity and stability; and  
(4) the type and frequency of variants during reproduction and multiplication and state how these variants may be identified
- 8b. Give a summary of the variety's distinctness. Clearly state how this application variety may be distinguished from all other varieties in the same crop. If the new variety is most similar to one variety or a group of related varieties:  
(1) identify these varieties and state all differences objectively;  
(2) attach statistical data for characters expressed numerically and demonstrate that these are clear differences; and  
(3) submit, if helpful, seed and plant specimens or photographs (prints) of seed and plant comparisons which clearly indicate distinctness.
- 8c. Exhibit C forms are available from the PVPO Office for most crops; specify crop kind. Fill in Exhibit C (Objective Description of Variety) form as completely as possible to describe your variety.
- 8d. Optional additional characteristics and/or photographs. Describe any additional characteristics that cannot be accurately conveyed in Exhibit C. Use comparative varieties as is necessary to reveal more accurately the characteristics that are difficult to describe, such as plant habit, plant color, disease resistance, etc.
- 8e. Section 52(5) of the Act requires applicants to furnish a statement of the basis of the applicant's ownership. An Exhibit E form is available from the PVPO.
9. If "Yes" is specified (*seed of this variety be sold by variety name only, as a class of certified seed*), the applicant **MAY NOT** reverse this affirmative decision after the variety has been sold and so labeled, the decision published, or the certificate issued. However, if "No" has been specified, the applicant may change the choice. (*See Regulations and Rules of Practice, Section 97.103*).
21. See Section 83 of the Act for the Contents and Term of Plant Variety Protection.
22. See Sections 41, 42, and 43 of the Act and Section 97.5 of the regulations for eligibility requirements.
23. See Section 5.5 of the Act for instructions on claiming the benefit of an earlier filing date.

21. CONTINUED FROM FRONT (Please provide a statement as to the limitation and sequence of generations that may be certified.)

USA - Released as a named cultivar, February 7, 2000

22. CONTINUED FROM FRONT (Please provide the date of first sale, disposition, transfer, or use for each country and the circumstances, if the variety (including any harvested material) or a hybrid produced from this variety has been sold, disposed of, transferred, or used in the U.S. or other countries.)

'Grandin' wheat is a component of this variety and received Plant Breeders Rights protection in Canada - certificate No. 0046 on August 25, 1993 by the North Dakota Agricultural Experiment Station.

23. CONTINUED FROM FRONT (Please give the country, date of filing or issuance, and assigned reference number, if the variety or any component of the variety is protected by intellectual property right (Plant Breeder's Right or Patent).)

**NOTES:** It is the responsibility of the applicant/owner to keep the PVPO informed of any changes of address or change of ownership or assignment or owner's representative during the life of the application/certificate. There is no charge for filing a change of address. The fee for filing a change of ownership or assignment or any modification of owner's name is specified in Section 97.175 of the regulations. (*See Section 101 of the Act, and Sections 97.130, 97.131, 97.175(h) of the Regulations and Rules of Practice.*)

To avoid conflict with other variety names in use, the applicant must check the variety names proposed by contacting: Seed Branch, AMS, USDA, Room 213, Building 306, Beltsville Agricultural Research Center-East, Beltsville, MD 20705. Telephone: (301) 504-8089.

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this collection of information is (0581-0055). The time required to complete this information collection is estimated to average 1.4 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

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S&T-470 (2-99) designed by the Plant Variety Protection Office with WordPerfect 6.0a. Replaces STD-470 (6-98) which is obsolete.

## EXHIBIT A - Origin and Breeding History 'Alsen' Wheat

Spring 1995	Original cross (3-way) made at North Dakota State University (NDSU) greenhouse.  Pedigree - ND674//ND2710/ND688  ND674 is a public breeding line derived from the cross Grandin*2/Glupro. ND2710 is a public breeding line derived from ND2603 (Sumai 3/Wheaton)//Grandin. ND688 is a public breeding line derived from Stoa/3/IAS20*4/H567.71//Amidon.  Sumai 3 is a public breeding genotype received from China. IAS20*4/H567.71 is a public breeding line received from CIMMYT, Mexico.
Summer 1995	F <sub>1</sub> plants, NDSU research land.
Fall 1995	F <sub>2</sub> plants, NDSU greenhouse.
Spring 1996	F <sub>3</sub> plant, single-seed-descent NDSU greenhouse.
Summer 1996	F <sub>4</sub> hill plot (F <sub>3</sub> -derived), NDSU research land.
Winter 1996-1997	F <sub>5</sub> plot (F <sub>4</sub> -derived), New Zealand.
Summer 1997	F <sub>6</sub> preliminary yield trial, 3 locations, NDSU research land. Seed increase (42 lbs), Prosper, ND.
Summer 1998	F <sub>7</sub> elite yield trial, 4 locations, NDSU research land. Seed increase, Seedstocks Project, NDSU Experimental line designation - ND716.
Winter 1998-1999	Seed increases (California and NZ), Seedstocks Project, NDSU.
Summer 1999	North Dakota HRS wheat variety trial, 7 locations.  Uniform Regional HRS Wheat Nursery, 17 locations, Upper Midwest, USA.  Seed increase, Seedstocks Project, NDSU.
February 7, 2000	ND716 released as a named cultivar, 'Alsen'.

Observations indicate Alsen is uniform and stable within commercially acceptable limits for all traits as described in Exhibit C. Uniformity and stability of Alsen were observed 1997-1999 for four generations ( $F_6$ - $F_9$ ). Variants (taller plants (5-10 cm) at a frequency of 6/10,000 and awnless plant variants at a trace frequency of less than 1/10,000.

Selection criteria for the breeding of Alsen wheat were highly heritable traits (i.e. plant height, maturity, disease resistance) in the early segregating generations,  $F_2$ - $F_5$ . Beginning in the  $F_6$  generation, selection criteria also included lodging resistance, shattering resistance, test weight, grain yield and breadmaking characters (grain protein, milling extraction, dough mixing, loaf volume, external and internal loaf appearance). Data were obtained from multiple locations and over years to evaluate and identify the experimental line ND716 that was named Alsen. Overall, the selection criteria were a combination of traits used to identify a superior hard red spring wheat genotype adapted to North Dakota wheat production, and a genotype having acceptable (compared to check cultivars) milling and breadmaking properties for domestic and export markets.

**EXHIBIT B - Statement of Distinctness**

To my knowledge 'Alsen' most nearly resembles 'Grandin' and 'Reeder'. Differences include but are not necessarily restricted to the following:

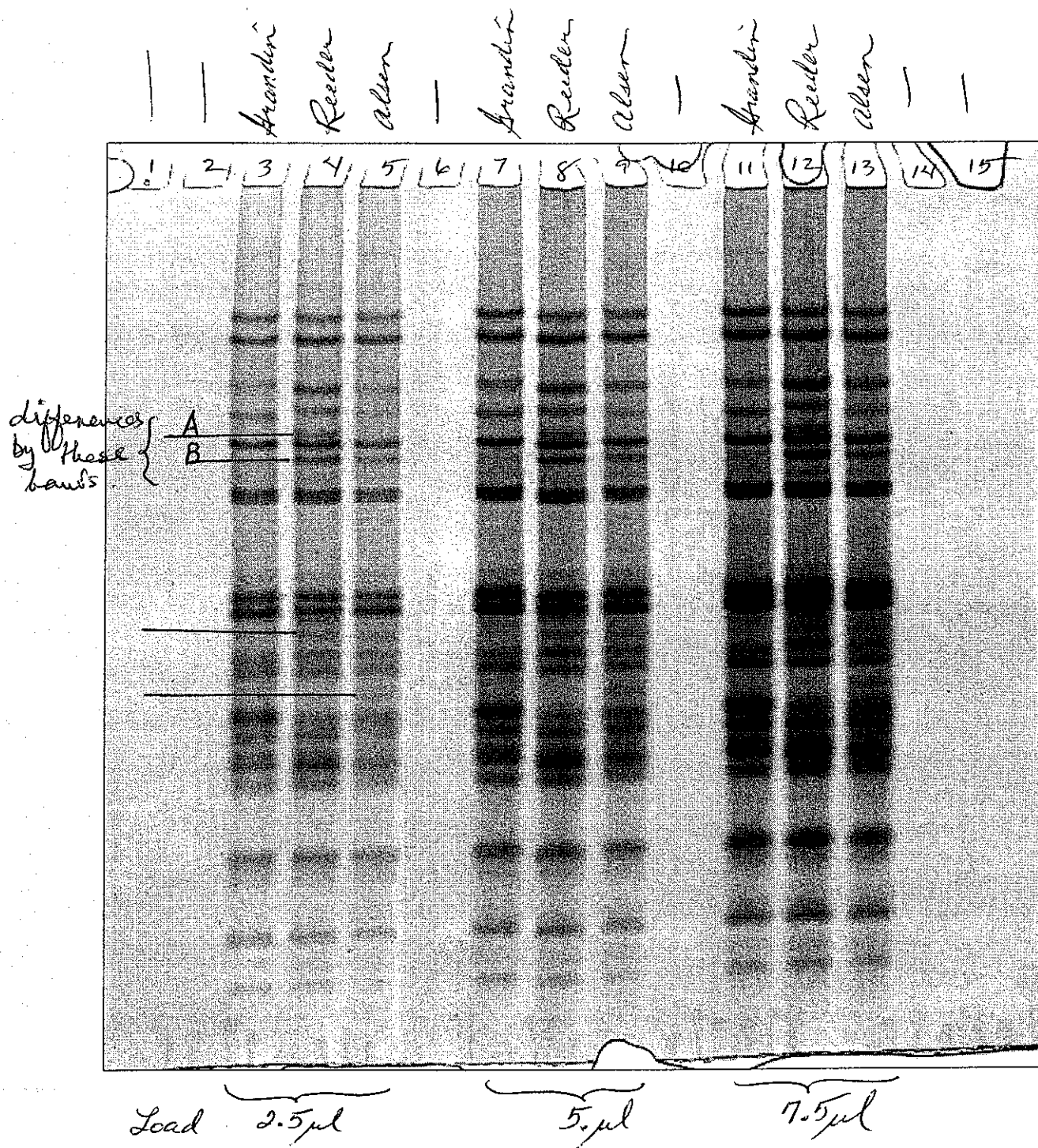
1. Alsen differs from Grandin for gel electrophoresis pattern (PAGE) shown in a computer generated image of gliadin patterns (Figure 1). The band at location marked B is present for Alsen but absent for Grandin.
2. Alsen differs from Reeder for gel electrophoresis pattern (PAGE) shown in a computer generated image of gliadin patterns (Figure 1.). The band at location marked A is absent for Alsen but present for Reeder.

1/8/2001 - A-TAGE

# 2116A

200100000

Fig. 1. -1.5mm, 7.5% Acryl  
-Aladin patterns of HRSW samples rec'd from Dr. R. Fekberg  
for documentation of plant Variety Protection.



- Extn = 50. mg / 300.  $\mu$ l 70% EtOH @ 40°C ~ 1 hr.  
then centrifuge + combine supernatant 1:1 with sample buffer.

- Atam CBB-G.

REPRODUCE LOCALLY. Include form number and date on all reproductions.

Form Approved - OMB No. 0551-0025

Public reporting burden for this collection of information is estimated to average 30 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Department of Agriculture, Clearance Officer, OIRM, AG Box 7630, Jamie L. Whitson Building, Washington, D.C. 20250. When replying, refer to OMB No. 0551-0025 and form number in your letter. Under the PRA of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

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U.S. DEPARTMENT OF AGRICULTURE  
AGRICULTURAL MARKETING SERVICE  
SCIENCE AND TECHNOLOGY  
PLANT VARIETY PROTECTION OFFICE  
BELTSVILLE, MD 20705

EXHIBIT C  
(Wheat)

OBJECTIVE DESCRIPTION OF VARIETY  
WHEAT (*Triticum* spp.)

NAME OF APPLICANT(S) NDSU Research Foundation	FOR OFFICIAL USE ONLY
ADDRESS (Street and No. or RD No., City, State, and Zip Code) c/o Executive Director P.O. Box 5014 Fargo, ND 58105-5014	PVPO NUMBER 200100060
	VARIETY NAME
	TEMPORARY OR EXPERIMENTAL DESIGNATION

PLEASE READ ALL INSTRUCTIONS CAREFULLY: Place the appropriate number that describes the varietal character of this variety in the boxes below. Place a zero in the first box (e.g.  or ) when number is either 99 or less or 9 or less respectively. Data for quantitative plant characters should be based on a minimum of 100 plants. Comparative data should be determined from varieties entered in the same trial. Royal Horticultural Society or any recognized color standard may be used to determine plant colors; designate system used: Please answer all questions for your variety; lack of response may delay progress of your application.

1. KIND:

<input type="text" value="1"/>	1=Common	2=Durum	3=Club	4=Other (SPECIFY):
--------------------------------	----------	---------	--------	--------------------

2. VERNALIZATION:

<input type="text" value="1"/>	1=Spring	2=Winter	3=Other (SPECIFY):
--------------------------------	----------	----------	--------------------

3. COLEOPTILE ANTHOCYANIN:

<input type="text" value="1"/>	1=Absent	2=Present
--------------------------------	----------	-----------

4. JUVENILE PLANT GROWTH:

<input type="text" value="2"/>	1=Prostrate	2=Semi-erect	3=Erect
--------------------------------	-------------	--------------	---------

5. PLANT COLOR (boot stage):

<input type="text" value="2"/>	1 = Yellow-Green	2 = Green	3 = Blue-Green
--------------------------------	------------------	-----------	----------------

6. FLAG LEAF (boot stage):

<input type="text" value="2"/>	1 = Erect	2 = Recurved	<input type="text" value="2"/>	1 = Not Twisted	2 = Twisted
--------------------------------	-----------	--------------	--------------------------------	-----------------	-------------

7. EAR EMERGENCE:

<input type="text" value="0"/> <input type="text" value="4"/>	Number of Days Earlier Than	'McVey'	*
<input type="text" value="0"/> <input type="text" value="1"/>	Number of Days Later Than	'Butte 86'	*



## 8. ANTHOR COLOR:

☐ 1

1 = Yellow

2 = Purple

## 9. PLANT HEIGHT (from soil to top of head, excluding awns):

☐ 0 ☐ 3

cm Taller Than

'HJ98'

☐ 1 ☐ 2

cm Shorter Than

'Parshall'

\* Relative to a PVPO-Approved Commercial Variety Grown in the Same Trial

## 10. STEM:

## A. ANTHOCYANIN

☐ 1

1 = Absent

2 = Present

## B. WAXY BLOOM

☐ 1

1 = Absent

2 = Present

## C. HAIRINESS (last internode of rachis)

☐ 2

1 = Absent

2 = Present

## D. INTERNODE (SPECIFY NUMBER)

04

☐ 1

1 = Hollow

2 = Semi-solid

3 = Solid

## E. PEDUNCLE

☐ 2

1 = Absent

2 = Present

☐ 2.2

cm Length

## 11. HEAD (at Maturity):

## A. DENSITY

☐ 2

1 = Lax

2 = Middense

3 = Dense

## B. SHAPE

☐ 1

1 = Tapering

2 = Strap

3 = Clavate

4 = Other (SPECIFY):

## C. CURVATURE

☐ 1

1 = Erect

2 = Inclined

3 = Recurved

## D. AWNEDNESS

☐ 4

1 = Awnless

2 = Apically Awnletted

3 = Awnletted

4 = Awned

## 12. GLUMES (at Maturity):

## A. COLOR

☐ 3

1 = White

2 = Tan

3 = Other (SPECIFY): Yellow

## C. BEAK

☐ 3

1 = Obtuse

2 = Acute

3 = Acuminate

## B. SHOULDER

☐ 5

1 = Wanting

2 = Oblique

3 = Rounded

4 = Square

5 = Elevated

6 = Apiculate

## D. LENGTH

☐ 2

1 = Short

2 = Medium

(ca. 7mm)

(ca. 8mm)

3 = Long (ca. 9mm)

2. GLUMES (at Maturity) Continued:

E. WIDTH

200100060

☒ 1 = Narrow (ca. 3mm) 2 = Medium (ca. 3.5mm)  
3 = Wide (ca. 4mm)

3. SEED:

A. SHAPE

☒ 1 = Ovate 2 = Oval 3 = Elliptical

C. BRUSH

☒ 1 = Short 2 = Medium 3 = Long  
☐ 1 = Not Collared 2 = Collared

B. CHEEK

☒ 1 = Rounded 2 = Angular

D. CREASE

☒ 1 = Width 60% or less of Kernel  
2 = Width 80% or less of Kernel  
3 = Width Nearly as Wide as Kernel

☒ 1 = Depth 20% or less of Kernel  
2 = Depth 35% or less of Kernel  
3 = Depth 50% or less of Kernel

E. Color

☒ 1 = White 2 = Amber 3 = Red  
4 = OTHER (Specify)

G. PHENOL REACTION (see instructions):

☒ 1 = Ivory 2 = Fawn  
3 = Light Brown 4 = Dark Brown  
5 = Black

F. TEXTURE

☐ 1 = Hard 2 = Soft

DISEASE: (0=Not Tested; 1=Susceptible; 2=Resistant; 3=Intermediate; 4=Tolerant)

PLEASE INDICATE THE SPECIFIC RACE OR STRAIN TESTED

☒ Stem Rust (*Puccinia graminis* f. sp. *tritici*)  
PgT-QCCJ-TPMK-QFCQ-RHTS-HPHS

☒ Leaf Rust (*Puccinia recondita* f. sp. *tritici*)  
Predominant ND field races.

☐ Stripe Rust (*Puccinia striiformis*)

☐ Loose Smut (*Ustilago tritici*)

☐ Tan Spot (*Pyrenophora tritici-repentis*)

☐ Flag Smut (*Urocystis agropyri*)

☐ Halo Spot (*Selenophoma donacis*)

☐ Common Bunt (*Tilletia tritici* or *T. laevis*)

☐ *Septoria nodorum* (Glume Blotch)

☐ Dwarf Bunt (*Tilletia controversa*)

☐ *Septoria avenae* (Speckled Leaf Disease)

☐ Karnal Bunt (*Tilletia indica*)

☐ *Septoria tritici* (Speckled Leaf Blotch)

☐ Powdery Mildew (*Erysiphe graminis* f. sp. *tritici*)

☒ Scab (*Fusarium* spp.)

☐ "Snow Molds"

200100066

14. Disease (Continued) (0=Not Tested; 1=Susceptible; 2=Resistant; 3=Intermediate; 4=Tolerant)

## PLEASE INDICATE THE SPECIFIC RACE OR STRAIN TESTED

- |   |  |
|---|--|
| <input type="checkbox"/> "Black Point" (Kernel Smudge)              | <input checked="" type="checkbox"/> 3 Common Root Rot ( <i>Fusarium</i> , <i>Cochliobolus</i> and <i>Bipolaris</i> spp.) |
| <input type="checkbox"/> Barley Yellow Dwarf Virus (BYDV)           | <input type="checkbox"/> Rhizoctonia Root Rot ( <i>Rhizoctonia solani</i> )  |
| <input type="checkbox"/> Soilborne Mosaic Virus (SBMV)              | <input type="checkbox"/> Black Chaff ( <i>Xanthomonas campestris</i> pv. <i>translucens</i> )                            |
| <input type="checkbox"/> Wheat Yellow (Spindle Streak) Mosaic Virus | <input type="checkbox"/> Bacterial Leaf Blight ( <i>Pseudomonas syringae</i> pv. <i>syringae</i> )                       |
| <input type="checkbox"/> Wheat Streak Mosaic Virus (WSMV)           | <input type="checkbox"/> Other (SPECIFY)   |
| <input type="checkbox"/> Other (SPECIFY)                            | <input type="checkbox"/> Other (SPECIFY)   |
| <input type="checkbox"/> Other (SPECIFY)                            | <input type="checkbox"/> Other (SPECIFY)   |
| <input type="checkbox"/> Other (SPECIFY)                            | <input type="checkbox"/> Other (SPECIFY)   |

15. INSECT: (0=Not Tested; 1=Susceptible; 2=Resistant; 3=Intermediate; 4=Tolerant)

## PLEASE SPECIFY BIOTYPE (where needed)

- |  |  |
|--|--|
| <input type="checkbox"/> Hessian Fly ( <i>Mayetiola destructor</i> )   | <input type="checkbox"/> Other (SPECIFY) |
| <input type="checkbox"/> 1 Stem Sawfly ( <i>Cephus</i> spp.)           | <input type="checkbox"/> Other (SPECIFY) |
| <input type="checkbox"/> Cereal Leaf Beetle ( <i>Oulema melanopa</i> ) | <input type="checkbox"/> Other (SPECIFY) |
| <input type="checkbox"/> Russian Aphid ( <i>Diuraphis noxia</i> )      | <input type="checkbox"/> Other (SPECIFY) |
| <input type="checkbox"/> Greenbug ( <i>Schizaphis graminum</i> )       | <input type="checkbox"/> Other (SPECIFY) |
| <input type="checkbox"/> Aphids  | <input type="checkbox"/> Other (SPECIFY) |

6. ADDITIONAL INFORMATION ON ANY ITEM ABOVE, OR GENERAL COMMENTS

None.

# Exhibit D - Additional Description 'Alsen' Wheat

1. Alsen is photoperiod insensitive (daylength neutral).
2. Alsen has typical milling and breadmaking properties for a hard red spring wheat (Attached Tables 1 and 2).

THE VALUES WERE DETERMINED  
BY AVERAGING VALUES FROM  
THE FOLLOWING STATIONS: CARRINGTON  
CASSELLTON  
MINOT  
PROSPER

NORTH DAKOTA STATE UNIVERSITY  
AGRICULTURAL EXPERIMENT STATION  
DEPARTMENT OF CEREAL SCIENCE AND FOOD TECHNOLOGY  
ANALYTICAL, MILLING AND BAKING DATA

FHB, EXPERIMENT 17  
TABLE I  
AVERAGES OF 4 STATIONS

3 HOUR FERMENTATION

FARINOGRAM

VARIETY OR NUMBER	YLD BPA	WT LB/BU	KER %	NO SEC	WHT		PROTEIN 14% MB	WHT FAL	EXT		FLR	WET	FLR	PEAK	MIX	VOL		G-T	CB	CT	SYM
					FLR	%			FLR	%						CC	DO				
ALSEN	ND	61.0	75	379	15.1	13.9	69.4	37.6	0.42	11.4	23.3	16	7.3	64.2	3.20	9.8	1028	7.8	7.6	10.0	9.5
GRANDIN	ND	58.7	62	403	15.0	13.9	71.6	36.3	0.44	16.8	27.3	18	7.0	62.9	3.45	10.0	1065	8.1	7.9	10.0	10.0
SHARP	ND	60.2	51	384	14.4	13.4	69.7	38.3	0.39	7.9	14.3	23	5.3	62.3	2.40	9.8	966	8.1	7.9	10.0	9.8
TRENTON	ND	59.6	71	397	14.6	13.5	70.8	34.7	0.40	19.0	34.3	10	7.8	60.7	3.50	9.8	1021	8.4	8.3	10.0	9.5

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THE VALUES WERE DETERMINED  
BY AVERAGING VALUES FROM  
THE FOLLOWING STATIONS: CARRINGTON  
CASSELTON  
DICKINSON  
HETTINGER  
LANGDON  
WILLISTON

NORTH DAKOTA STATE UNIVERSITY  
AGRICULTURAL EXPERIMENT STATION  
DEPARTMENT OF CEREAL SCIENCE AND FOOD TECHNOLOGY  
ANALYTICAL, MILLING AND BAKING DATA

FIELD PLOT VARIETY TRIALS  
TABLE 2  
AVERAGES OF 6 STATIONS

3 HOUR FERMENTATION

FARINOGRAM

VARIETY OR NUMBER	YLD BPA	WT LB/BU	KER %	NO SEC	WHT		EXT %	GLU %	ASH %	TIME MIN	TOL MIN	MTI BU	CLASS	ABS %	TIME MIN	DO	VOL CC	G-T	CB CL	CT CL	SYM
					FAL	PROTEIN 14% MB															
TEST	VIT	FAL	WET	FLR	WET	FLR	PEAK	MIX	MIX	LOAF											
ALSEN	ND	60.6	82	409	15.1	14.2	67.0	37.4	0.49	11.8	19.9	17	6.7	66.0	2.65	10.0	1067	8.0	8.0	9.8	10.0
BUTTE 86	ND	59.2	72	420	15.2	14.3	66.9	39.8	0.46	6.7	12.0	33	4.7	66.0	2.00	9.8	1035	8.0	8.1	10.0	9.7
GRANDIN	ND	58.6	65	421	15.1	14.2	67.9	37.1	0.48	9.0	16.5	25	6.2	64.7	2.70	10.0	1064	8.3	8.3	10.0	10.0
TRENTON	ND	59.9	80	390	15.4	14.4	68.5	37.8	0.45	15.1	27.8	21	6.8	65.0	2.60	10.0	1094	8.3	8.8	10.0	10.0

200100066

**EXHIBIT E**  
**STATEMENT OF THE BASIS OF OWNERSHIP**

The following statements are made in accordance with the Privacy Act of 1974 (5 U.S.C. 552a) and the Paperwork Reduction Act (PRA) of 1995.

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

1. NAME OF APPLICANT(S) NDSU RESEARCH FOUNDATION		2. TEMPORARY DESIGNATION OR EXPERIMENTAL NUMBER ND716	3. VARIETY NAME Alsen
4. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP, and Country) c/o Executive Director P.O. Box 5014 Fargo, ND 58105-5014		5. TELEPHONE (include area code) 701-231-8931	6. FAX (include area code) 701-231-1013
		7. PVPO NUMBER 200100060	
8. Does the applicant own all rights to the variety? Mark an "X" in appropriate block. If no, please explain. <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO			
9. Is the applicant (individual or company) a U.S. national or U.S. based company? If no, give name of country <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO			
10. Is the applicant the original owner? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO If no, please answer one of the following: a. If original rights to variety were owned by individual(s), is (are) the original owner(s) a U.S. national(s)? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO If no, give name of country b. If original rights to variety were owned by a company(ies), is(are) the original owner(s) a U.S. based company? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO If no, give name of country			
11. Additional explanation on ownership (if needed, use reverse for extra space): See next page - Statement of the basis of the applicant's ownership.			

**PLEASE NOTE:**

Plant variety protection can be afforded only to owners (not licensees) who meet one of the following criteria:

1. If the rights to the variety are owned by the original breeder, that person must be a U.S. national, national of a UPOV member country, or national of a country which affords similar protection to nationals of the U.S. for the same genus and species.
2. If the rights to the variety are owned by the company which employed the original breeder(s), the company must be U.S. based, owned by nationals of a UPOV member country, or owned by nationals of a country which affords similar protection to nationals of the U.S. for the same genus and species.
3. If the applicant is an owner who is not the original owner, both the original owner and the applicant must meet one of the above criteria.

The original breeder/owner may be the individual or company who directed final breeding. See Section 41(a)(2) of the Plant Variety Protection Act for definition.

According to the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0581-0055. The time required to complete this information collection is estimated to average 10 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in its programs on the basis of race, color, national origin, sex, religion, age, disability, political beliefs, and marital or familial status. (Not all prohibited bases apply to all programs). Persons with disabilities who require alternative means for communication of program information (braille, large print, audiotape, etc.) should contact USDA's TARGET Center at 202-720-2600 (voice and TDD).

To file a complaint, write the Secretary of Agriculture, U.S. Department of Agriculture, Washington, D.C. 20250, or call 1-800-245-6340 (voice) or (202) 720-1127 (TDD). USDA is an equal employment opportunity employer.

STD-470-E (07-97) (Destroy previous editions).

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## Exhibit E Item 11.

## Statement of the Basis of Applicant's Ownership

Dr. Richard C. Frohberg, an employee of the North Dakota Agricultural Experiment Station and North Dakota State University, is a plant breeder who developed 'Alsen' the hard red spring wheat cultivar for which Plant Variety Protection is hereby sought. The employee by agreement and because of the condition of the use of facilities and funds of the North Dakota Agricultural Experiment Station and North Dakota State University has assigned all ownership rights to 'Alsen' hard red spring wheat to the North Dakota Agricultural Experiment Station and North Dakota State University.

North Dakota State University on behalf of the North Dakota Agricultural Experiment Station has assigned all ownership to the NDSU Research Foundation. The NDSU Research Foundation is a non-profit corporation set up to own and manage intellectual property of North Dakota State University.